

Crotalaria inaequalis A.E.Holland (Fabaceae), a new species from the Gulf Plains, Queensland

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Summary

Holland, A.E. (2009). *Crotalaria inaequalis* A.E.Holland (Fabaceae), a new species from the Gulf Plains, Queensland. *Austrobaileya* **8(1)**: 65–68. The new species, *Crotalaria inaequalis*, is described and illustrated, together with a map of its distribution. The distribution, habitat and conservation status of *C. inaequalis* is discussed. *Crotalaria inaequalis* is only known from the vicinity of Croydon in the Gulf Plains in northern Queensland. An amendment to the key by Holland (2002) to Australian species of *Crotalaria* is provided.

Key Words: Fabaceae, *Crotalaria inaequalis*, *Crotalaria smithiana*, *Crotalaria mitchellii*, Australia, Australian flora, Queensland flora, taxonomy, new species, identification key

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Introduction

The genus *Crotalaria* L. includes more than 600 species worldwide with 18 species currently considered to be native to Australia (Holland 2002). Eleven of these species occur in north-western Queensland: *Crotalaria dissitiflora* Benth. (Section *Hedriocarpae* Wight & Arn.); *C. calycina* Schrank, *C. humifusa* Graham ex Benth., *C. montana* Heyne ex Roth, *C. brevis* Domin, *C. ramosissima* Roxb. and *C. crispata* F.Muell. ex Benth. (all section *Calycinae* Wight & Arn.); *C. aridicola* Domin and *C. medicaginea* Lam. (section *Dispermae* Wight & Arn.); *C. novae-hollandiae* DC. and *C. verrucosa* L. (section *Crotalaria*). Of these, *Crotalaria dissitiflora*, *C. brevis*, *C. crispata*, *C. aridicola* and *C. novae-hollandiae* are endemic to Australia. All of these species are widely distributed and considered not to be threatened.

In 1997, a specimen of an unknown *Crotalaria* was collected by Jenny Milson from the Croydon area in the Gulf Plains bioregion, an unique area of grassy woodland on sandy hills. It was again collected in 1999, 2003 and 2004, found growing mainly in disturbed areas, suggesting a possible introduction. However, after investigation, and assistance

from Dr Roger Polhill who checked material held at the Royal Botanic Gardens Kew, it was clear that it was indeed a native species. In the last two years Keith McDonald has collected several more specimens and it is now possible to describe this new endemic species, which is restricted to this area of unique habitat.

Taxonomy

***Crotalaria inaequalis* A.E.Holland, species nova** *C. smithiana* A.T.Lee maxime affinis. Ab illo habitu prostrato, quoque pari stipularum inaequimagno etiam stipulis ovatis obovatisve et lobis calycis tubum duplo superans, differt. **Typus:** Queensland. BURKE DISTRICT: Croydon Cemetery, 2.1 km S of Croydon, Apr 2009, *K.R.McDonald KRM8383* (holo: BRI [AQ747613]; iso: CNS, CANB, DNA, PERTH, K *distribuendi*).

Prostrate herb with a perennial tap root. Stems to 70 cm long, striate, densely villous, the hairs spreading to retrorse, c. 1 mm long, white or light brown. Leaves simple, blade obovate to narrowly oblong, variable in size, 6–41 mm long, 3–21 mm wide, obcordate or emarginate at apex, tapered at base; upper surface dark green, sparsely to moderately villous; lower surface paler, moderately to densely villous. Petiole 1–3 mm long, not articulate. Stipules in unequal pairs, sessile, variable in size, villous, entire, often persisting after leaf fall. Larger stipule (of pair) slightly longer and

wider initially and increasing in size over time, ovate to obovate or oblique, 3–12 mm long, 1.8–8 mm wide, the acute to acuminate apex becoming obliquely set to one side as the blade expands. Smaller stipule ovate or elliptic to somewhat falcate, acuminate, 1–3.5 mm long, 0.5–1.5 mm wide. Racemes leaf opposed, determinate, 3–9 cm long, villous, with up to 10 flowers spaced unevenly along the rachis and spreading (in the same plane) at *c.* 90° from the prostrate rachis. Bracts, bracteoles and pedicels villous; bracts sessile, ovate, acuminate, 2–4 mm long, 1–2.2 mm wide, persistent; bracteoles filiform, inserted variously on the pedicel mostly in the lower half, caducous; pedicels 3–8 mm long at anthesis, slightly increasing in length as fruit develops. Calyx 5–7.5 mm long, deeply divided into 5 subequal lobes, villous, persistent; tube campanulate 1.5–2.3 mm long, 5-veined; lobes more than twice the length of the tube, narrowly triangular, acuminate, 3.2–5.7 mm long, 1–2 mm wide at base, flat. Corolla longer than calyx, yellow, the outer surface stained reddish orange, sometimes darker at the tips; standard suborbicular, strongly reflexed at maturity, 11–12 mm long and wide, rounded with a small mucro at apex, with two horizontal folds near base, and a few hairs along the midrib on the outer surface; claw 1–2 mm long and *c.* 1.5 mm wide, ciliate; wings oblong, 9–10 mm long and *c.* 5 mm wide, more or less equalling the keel, rounded at apex; upper margin convex with a slight fold at the base; lower margin more or less straight; claw slightly twisted, 1–2 mm long; keel sharply upturned by *c.* 90° from the base, 10–11 mm long, 6–7 mm wide; lower margin open along the rounded base, ciliate along the edges; upper margin sinuate with a slight pocket towards base; beak 7–9.5 mm long, twisted by *c.* 180° at the apex; claw *c.* 2 mm long, ciliate. Stamens with long anthers 1.2–1.4 mm long, short anthers *c.* 0.3 mm long. Style sharply reflexed upwards, hairy on the upper side for *c.* 1/3 of the length below the stigma. The style elongating over time, and protruding from the base of the keel along with several of the stamens. Pods spreading (in same plane) at *c.* 90° to the rachis, subsessile, inflated, oblong-clavate, 20–26 mm long, 8–12 mm wide, glabrous, light brown when mature,

indistinctly veined, tapered at the base and with a 1–2 mm mucro (persistent style base) at apex. Ovules 8–12, usually with 6 seeds developing. Seeds oblong-reniform, flattened, 3–4.5 mm long and wide, yellowish-brown, smooth. **Fig. 1.**

Additional specimens examined: Queensland. BURKE DISTRICT: 2.5 km by road, W of Croydon, Mar 2007, *McDonald KRM6255* (BRI); Near Croydon Cemetery, 2 km S of Croydon, Feb 2007, *McDonald KRM6061* (BRI); Lake Belmore, near Croydon, Aug 2003, *Fensham 4917* (BRI); 32 km by road S of Croydon towards Claraville Station, Sep 2006, *McDonald KRM5751* (BRI); Warrigal Creek, 16 km along Richmond road from Prospect Station road junction, Mar 2008, *McDonald KRM7563* (BRI, CNS); *c.* 10 km S of Glenora Station, N of Gilberton, Site CRC45, Jun 1999, *Fox IDF207* (BRI, CNS); Fog Creek Station, near Fog Creek, *c.* 15 km N of homestead, 180 km N of Richmond, Apr 2004, *Kahler TH7973* (BRI); Taldora Homestead, 150 km N of Julia Creek, just E of Saxby Roundup grounds, Aug 2004, *Laffey AZ11622* (BRI); 4 km N of Arizona House, Apr 1997, *Milson JMI274* (BRI).

Distribution and habitat: The species occurs in low open woodland of *Eucalyptus*, *Corymbia*, *Lysiphylum* and *Acacia julifera*/*Acacia torulosa*/*Acacia leptostachya* with grass or herb understorey on sand, often on alluvium in loose sand, in the vicinity of Croydon. It is found in areas disturbed by fire or flooding. It is common in the Croydon cemetery which is disturbed regularly by slashing (**Map 1**).

Phenology: This species flowers sporadically from February to June, probably in response to monsoonal rain.

Notes: This species is characterised by the unequal stipule pairs, the prostrate habit, and the large flowers and pods. It appears to be related to the shrubby *Crotalaria smithiana* which has similar leaves, flowers and pods. It has been confused with *Crotalaria humifusa*, another prostrate species which, however, has much smaller flowers and pods. There are no similar species occurring in the area. Many Australian species of *Crotalaria* are known to be toxic (Everist 1981); however, this species has not been investigated.

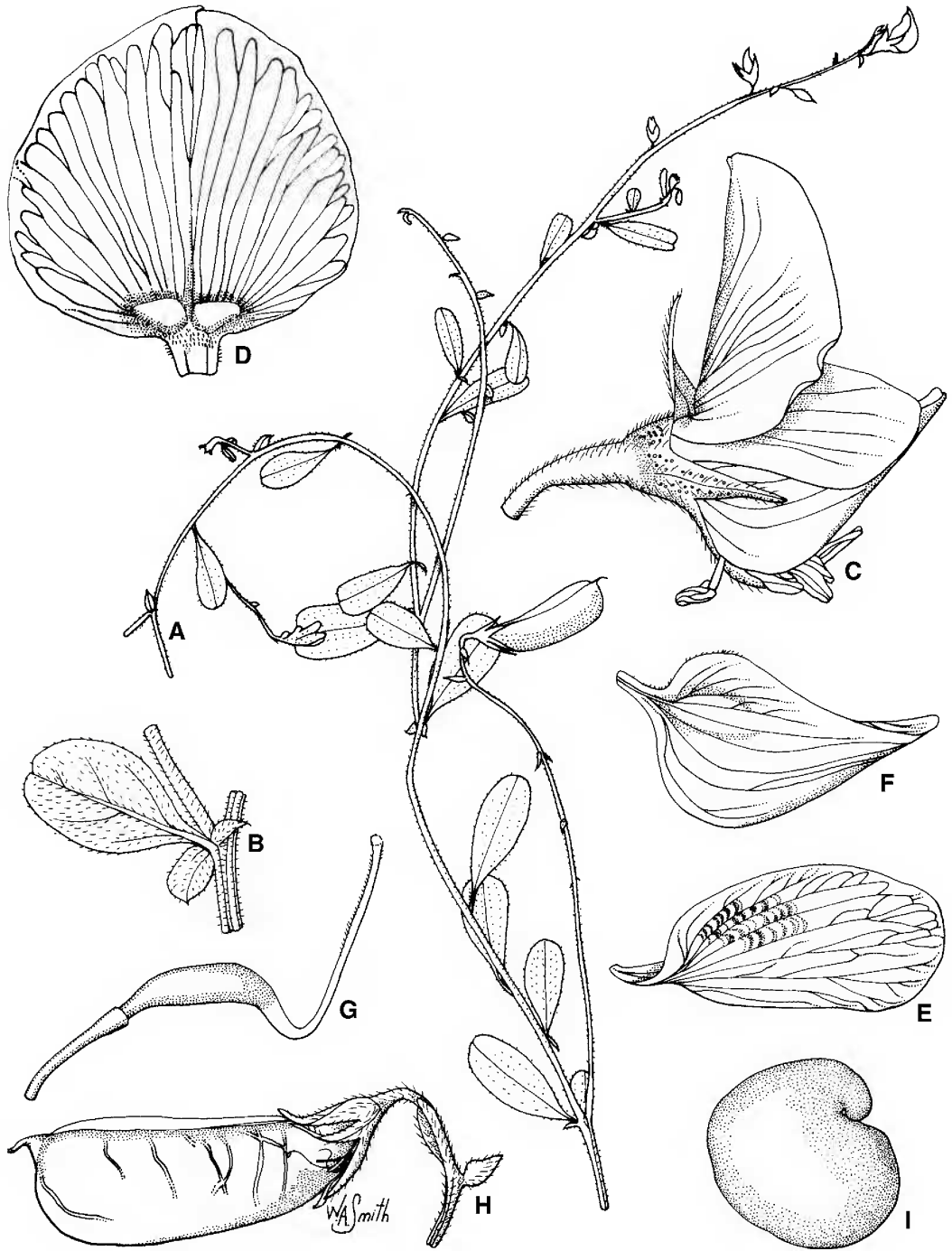


Fig. 1. *Crotalaria inaequalis*. A. habit $\times 0.8$. B. Leaf showing unequal stipules $\times 3$. C. flower $\times 4$. D. standard petal (inside) $\times 4$. E. wing petal (inside) $\times 4$. F. keel $\times 4$. G. ovary, style and stigma $\times 3$. H. pod $\times 2$. I. seed $\times 6$. All drawn from McDonald KRM7563 (BRI). Del. W. Smith.

The key to species in Australia as presented in Holland (2002) is amended after couplet 19 by inserting:

- 19a Stipules in unequal pairs, one much larger than the other; calyx 5–7.5 mm long and calyx lobes subequal and more than twice the calyx tube **C. inaequalis**
- 19a. Stipules similar to each other; calyx either more than 7 mm long or if shorter, then calyx lobes unequal or lobes less than twice the length of the calyx tube 20

Conservation status: This species occurs in the northern Claraville Plains province of the Gulf Plains bioregion, between 18°11' and 19°30'S and 141°17' and 143°05'E, with an extent of occurrence of about 1000 km². It has recently been located in reasonable numbers in the Croydon area and appears to respond positively to disturbance either from fire or flood, and in some areas, to mechanical slashing or light grading (K.R.McDonald, *pers. comm.* May 2009). There are no identified threats to the species. A conservation status of least concern is therefore recommended.

Etymology: This species is named for the unequal stipule pairs that are the distinguishing feature.

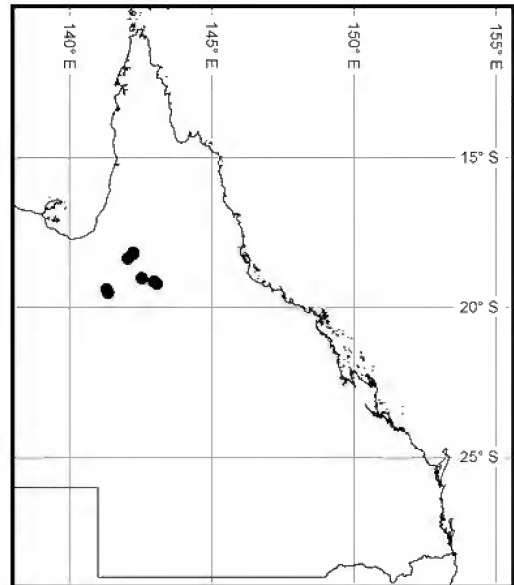
Acknowledgements

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References

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Map 1. Distribution of *Crotalaria inaequalis*